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FINANCIAL LITERACY AMONG UNIVERSITY STUDENTS: EMPIRICAL EVIDENCE FROM INDONESIA

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ABSTRACT

This study investigates the level of financial literacy among undergraduate and graduate students. The study also examines the association between the students' demographic factors and their financial literacy rate. Data were collected by distributing 800 questionnaires to undergraduate and graduate students of Gadjah Mada University, Indonesia, covering cross educational majors, ages, gender, education levels, marital status, income, and work experience. Out of the sample, a total of 348 respondents returned completed questionnaires, which gave a response rate of 43.5 percent. The findings show that on average 45.39 percent of the respondents answered the questions correctly, which is relatively low compared to what other studies found in other countries, such as Chen and Volpe (1998) in the US (52.87 percent), or Beal and Delpachitra (2003) in Australia (53 percent). It also seems that male students, students with economics and business majors, those with higher incomes, and more work experience have a higher financial literacy rate. Using probit and tobit regression tests, the study revealed that education levels and academic disciplines are positively associated with the financial literacy rate.

Keywords: *financial information, literacy rate, education, finance, Indonesia*

INTRODUCTION

The most recent financial crisis teaches invaluable lessons about two important aspects: the importance of more honest and disclosed financial information, as well as the need for a better level of financial literacy, which will be very useful in digesting information and making rational and conscientious decisions. William (2007) stated that financial literacy had become an important issue not only for internal business organizations, such as a board of directors, but also for stockholders and stakeholders (such as customers, employees, and the general community). Better financial literacy rates can be expected to minimize the negative impacts of financial crises and to improve corporate governance. The underlying argument is that more literate, skilled consumers are expected to search the markets more effectively, monitor firms more attentively, switch providers more efficiently, and exercise their consumer powers to drive out of the market firms that are dishonest, incompetent, or indifferent to consumers' needs.

Financial literacy can be generally defined as a person's ability to understand, manage, analyze, and communicate personal financial matters (Rosacker et al., 2009). Therefore, financial literacy refers to the knowledge and skills necessary to handle financial challenges and decisions in everyday life. A person with a better financial literacy rate will not only be more effective in doing simple financial calculations for their household budget, considering their ability to pay interest on loans, using credit or debit cards wisely, but also when considering using or buying more sophisticated financial products or

services, such as mortgages, pension or investment funds, insurance, shares, bonds or even other financial derivatives and private equity investments.

Lusardi and Mitchell (2011) showed that there is a positive association between financial literacy and personal wealth. They also argued that at the macro-level, the more financially literate citizens of a country would ensure a better ability exists to deal with everyday financial situations and transactions in the marketplace, which then, in the aggregate, would produce more optimal financial decisions and yield a better level of well-being for the society.

Previous research into financial literacy has focused on two main topics: an assessment of the individual's knowledge on several topics in personal finance; and the consequences of low or high financial literacy rates (Perry, 2008). Some survey studies have been carried out to measure the levels of financial literacy rates in various countries, such as: Chen and Volpe (1998), Volpe et al. (2002), and Rosacker et al. (2009) in the US; Marriott (2007) in the UK, Beal and Delpachitra (2003) and ACNielsen Research (2005) for the case of Australia, Al-Tamimi and Kalli (2009 in the UAE, and Bönte and Filipiak (2012) for the case of India.

Chang and Hanna (1992) found that individuals with high levels of financial literacy tended to make more efficient decisions compared to those who have a lower financial literacy rate. Perry and Morris (2005) depicted that individuals with better financial literacy rates are more inclined to save and to have a budget for their future financial planning. Some other researches (Hilgert et al., 2002; Perry and Morris, 2005) showed a positive association between financial literacy rates and the levels of education and income.

A higher financial literacy rate is associated with a tendency for consumers to be engaged in processes leading to optimal decision making. This often results in positive financial behavior which does not vary much from the recommended guidelines, which, in turn, contributes to better levels of financial well-being (Hilgert, et al., 2003; Lusardi and Mitchell, 2007). Furthermore, Beverly and Burkhalter (2005) and Martin and Oliva (2001) argued that measurement of the financial literacy of young people was especially important when viewed from the perspective that efforts to increase the financial knowledge and skills acquired early in life create a foundation for future financial behavior and well-being. Rosacker et al. (2009) stated that obtaining sufficient education and understanding of the basic financial knowledge and skills will be beneficial for university students to make them productive and successful members of society. Therefore, there is the need to improve the financial literacy of individuals, especially students at university level, so they can have positive cash management attitudes before they enter the job market.

Most of the previous academic research into financial literacy rates was carried out in developed countries such as in the US, the UK, Australia (Chen and Volpe, 1998; Volpe et al., 2002; Rosacker et al., 2009; Marriott, 2007; Beal and Delpachitra, 2003) but some was conducted in developing countries (Al-Tamimi and Kalli, 2009; Bönte and Filipiak, 2012). Unfortunately, academic empirical evidence on financial literacy for the case of the Southeast Asian countries seems to be non-existent, especially for the case of Indonesia. This study fills the gap by contributing empirical evidence on the level of financial literacy among university students in Indonesia.

This study highlighted two main issues. The first is to investigate the level of financial literacy among undergraduate and graduate students with regards to their different demographic characteristics, such as their: education majors, age, gender, education level, marital status, income, and work experience. The second concern is to examine the association between the level of financial literacy with the demographic factors.

By distributing 800 questionnaires to undergraduate and graduate students of Gadjah Mada University, Indonesia, covering cross education majors, ages, gender, education levels, marital status, income, and work experience, we obtained a total of 348 respondents who returned completed questionnaires (a 43.5 percent response rate). The results confirmed that on average 45.39 percent of the respondents answered

the questions correctly. It was also found that male students, students with economics and business majors, those with a higher income, and longer working experience had a higher financial literacy rate. Using the probit and tobit regression tests, the study found that education levels and academic disciplines are positively related with the financial literacy rate.

Discussion of this paper proceeds as follows. In the next section, we provide the review of the available literature and any previous studies, and the development of the hypotheses, followed by the description of our data as well as research designs and proxies used for this study. The empirical results are presented in the last section along with the conclusions.

LITERATURE REVIEW

Financial literacy provides benefits not only when someone has to make a decision about investing their money, given the numerous alternatives available for investment (such as stocks, bonds, or mutual funds), but also when making simple daily financial judgments such as developing their household budget (planning the monthly income and budget for paying electricity, gas, water, telephone, food etc.), or considering buying new luxuries along with assessing the ability to pay the interest on bank loans or credit cards.

There are a variety of definitions for financial literacy. Some among many are delineated by OECD (2012), as: '…. a combination of awareness, knowledge, skill, attitude and behavior necessary to make sound financial decisions and ultimately achieve individual financial well being'. The paper further proposed that basic financial literacy contained three elements: financial knowledge; financial behavior and financial attitude; and financial product choice.

Remund (2010) summarized and classified various definitions for financial literacy into five categories: (1) knowledge of financial concepts (2) ability to communicate financial concepts (3) aptitude in managing personal finances (4) skill in making appropriate financial decisions, and (5) confidence in planning effectively for future financial needs.

Various empirical works have been done to measure financial literacy rates in different countries. Chen and Volpe (1998) surveyed 924 college students from 13 campuses in the USA to examine their personal financial literacy rate. It was found that there were significant differences in the financial literacy rate among the respondents in terms of their class level, academic discipline, gender, and years of work experience.

Moreover, Volpe et al. (2002) examined 530 online investors in order to investigate their financial literacy and its determinant. It was found that there were significant differences in the literacy rate among various groups of respondents in terms of their education level, experience, age, income, and gender. For the case from the UK, the study by Marriott (2007) also identified a relatively similar pattern that there was a gap in the financial literacy, particularly for university students.

A broader survey study by the OECD (2005) investigated financial literacy in 12 countries, including the USA, the UK, various European countries, Australia, and Japan. The results indicated that the average score for financial literacy in those countries was low for most of the respondents.

For the case of Australia, ACNielsen Research (2005) carried out a national survey of adult financial literacy in Australia. The findings showed that the financial literacy rate in Australia had slightly improved. It also found that the score varies for subgroups of respondents in terms of their education level, working skills, income, marital status, and age.

Beal and Delpachitra (2003) surveyed first year students in their first semester of studies at the University of Southern Queensland (USQ). The findings indicated that financial literacy rates among first year university students in Australia were relatively low. The findings also suggested that business students tended to have a better literacy rate than other students taking non-business disciplines. They also found that

financial literacy had a positive relationship with income and working experience.

Al-Tamimi and Kalli (2009) conducted a survey study to assess the financial literacy of individual investors in the UAE, who invested in the local financial markets in the UAE. The findings revealed that the financial literacy rate for the UAE investors was still far from the required level. It was also found that their financial literacy level was influenced by their income level, education level, and workplace activity.

Rosacker et al. (2009) studied 41 freshmen business school students who participated in a limited financial literacy training workshop in the USA. The result showed that the financial literacy training offered significant benefits for these freshmen business students.

More recently, a study was carried out by Bönte and Filipiak (2012) for the case of India. They investigated the relevance of social interaction and caste affiliation with the financial literacy and investment behavior of households in India. The results suggested a positive relationship between social interactions and financial literacy. The study also found that people living in regions with a large proportion of backward castes had a lower probability of being aware of various financial instruments.

Most of the previous empirical works have been done in developed countries. More empirical evidence on financial literacy from other Asian and developing countries is still needed. This study fills the gap by contributing empirical evidence for the case of Indonesia. Indonesia is one of the main emerging countries in Southeast Asia, and has the largest population and promising economic and capital market growth.

This study investigates two main research questions. Firstly, what is the extent of the financial literacy among undergraduate and graduate students in Indonesia? Secondly, what are the most influential factors that relate to financial literacy for the case of Indonesia? Based on the stated purpose of the study and on the research questions, the hypotheses of this study can be formulated as follows:

H_1: The financial literacy of university students in Indonesia is low.

H_2: There is a difference between the levels of financial literacy of university students in Indonesia, based on their gender.

H_3: There is a difference between the levels of financial literacy of university students in Indonesia, based on their age.

H_4: There is a difference between the levels of financial literacy of university students in Indonesia based on their marital status.

H_5: There is a difference between the levels of financial literacy of university students in Indonesia based on their education level.

H_6: There is a difference between the levels of financial literacy of university students in Indonesia based on their academic disciplines.

H_7: There is a difference between the levels of financial literacy of university students in Indonesia based on their income.

H_8: There is a difference between the levels of financial literacy of university students in Indonesia based on their years of work experience.

H_9: There is a positive relationship between financial literacy and gender, age, marital status, education level, academic disciplines, income, and years of work experience.

H_1 of this study is examined by using descriptive statistics of the average score for each indicator of financial literacy across the various demographic characteristics. H_2-H_8 are tested using a compare mean test (independent samples *t*-test and ANOVA test). Meanwhile, we utilize the probit regressions and tobit regression test to examine H_9.

RESEARCH METHOD

The study was administered at Gadjah Mada University (GMU) - Indonesia, one of the oldest and biggest universities in Indonesia. The respondents comprised of undergraduate and graduate students across five faculties: Economics and Business; Political Science; Psy-

chology, Agriculture; Agricultural Technology. We distributed a total of 800 questionnaires, and a total of 348 were returned completed, for a response rate of 43.5 percent.

The design of the questionnaire was based on the Chen and Volpe (1998) survey instrument. The questionnaire was redesigned specifically for the Indonesian context with terms relevant for the Indonesian case. The survey contained 35 questions with tick boxes to persuade participation in, and completion of, the questionnaire.

1. The questionnaire was divided into five parts, as follows:
   - Introductory and demographic questions: gender; age; marital status; education level; study disciplines; income; work experience (6 questions)
   - Knowledge about personal finance (8 questions)
   - Knowledge about borrowing and savings (8 questions)
   - Knowledge about insurance (5 questions)
   - Knowledge about investment (8 questions).

The responses from each respondent were then compiled to compute the mean percentage of correct scores for each question, section, and the entire survey. The mean percentage of correct scores was ranked and grouped into two groups based on the magnitude of the score, from a high to a low score. The first category represents a relatively high financial literacy rate, and the second category represents a relatively low level of financial literacy.

We employed an independent sample t-test and an Analysis of Variance (ANOVA) to examine the mean differences between the scores for the financial literacy indicators among the many groups, in terms of their: gender; age; marital status; education level; study disciplines; income and work experience. The tests were utilized to examine the $H_2 - H_8$ of this study. To test the last hypothesis of this study, we further analyzed the association between financial literacy and gender, age, marital status, education level, academic disciplines, income, and years of work experience using logistic regression models. The first model was the probit regression test, to examine the association of demographic factors on the probability of a high or low literacy rate.

The participants were classified into two subgroups using the median percentage of the correct answers to the sample. We assigned the value equal to 1 for the respondents with scores higher than the sample median and 0 otherwise, as the dependent variable, and the demographic factors as independent variables. The second model was the tobit regression test where we changed the value of the independent variables from a dichotomous variable into cornering variables as the average percentage scores of each respondent, representing the financial literacy level of each respondent.

The model for the probit and tobit regression can be expressed as follows:

$$\text{Fin\_Lit} = \beta_0 + \beta_1 \text{ Gender} + \beta_2 \text{ Age} + \beta_3 \text{ Marital} + \beta_4 \text{ Study\_Level} + \beta_5 \text{ Study\_Interest} + \beta_6 \text{ Income} + \beta_7 \text{ Working\_Exp} + \varepsilon$$

where:

Fin_Lit = the probability of a student having a high or low financial literacy rate for the probit regression test (1 for high financial literacy rate; 0 otherwise); the average scores of the financial literacy rate for the tobit regression test

Age = 1 if a participant is in the age group 17-22; 2 for the age group 23-27; 3 for the age group 28-32; 4 for the age group 33-37; and for the age group of > 37

Marital status = 1 for married respondent; and 0 otherwise

Study_Level = 1 for graduate level; and 0 for undergraduate level

Study_Interest = 1 for economics and business student; and 0 otherwise

Income = 1 if a participant is in the income group < IDR1 million; 2 if a participant is in the income group IDR1 million – IDR2 million; 3 if a participant is in the income group IDR2 million – IDR3 million; 4 if a partici-

pant is in the income group IDR3 million – IDR5 million; 5 if a participant is in the income group > IDR5 million

Working_Exp = 1 if a participant has no work experience; 2 if a participant is in the work experience group of < 2 years; 3 if a participant is in the work experience group of 2 – 4 years; 4 if a participant is in the work experience group of 4 – 6 years; 5 if a participant is in the work experience group of > 6 years

ε = error term

RESULTS AND DISCUSSION

The respondents were asked to provide demographic data that included their gender; age; marital status; education level; study disciplines; income and work experience. Table 1 provides descriptive statistics for the respondents' characteristics.

Out of the total of 348 respondents, 44.8 percent of them are male, and the remaining 55.2 percent are female students. In terms of their ages, 62.9 percent of the respondents belong within the group of 17-22 year olds, 13.5 percent are 23-27 years old, 5.2 percent are 28-32 years old, 6.3 percent are 33-37 years old, and 12.1 percent are more than 37 years old. With respect to marital status, 77.6 percent of the respondents are single, and 23.3 percent are married. Most of the respondents (65.5 percent) are undergraduate students, while the other 35.5 percent are in the graduate program. In terms of academic disciplines, 45.4 percent of the respondents are economics and business students with the other 54.6 percent studying non-economic and business disciplines. About 77.9 percent of the respondents have a monthly income of less than IDR3 million and the other 22.1 percent have more than IDR3 million a month income The results also depict that 34.2 percent of the participants had no working experience, 34.2 percent only had less than two years working experience, and the remaining 21.8 percent had more than two years work experience.

Table 1. Descriptive and mean percentages of correct responses of the samples

	Number (percent of samples)	Personal Finance	Saving & Loan	Insurance	Investment	Average Score
A. Gender						
Male	156 (44.8 percent)	49.04	48.80	54.49	39.90	48.06
Female	192 (55.2 percent)	44.73	41.47	51.67	34.24	43.03
t-statistics		2.20**	3.57***	1.22	3.10***	3.54***
B. Age						
17 – 22	219 (62.9 percent)	44.81	42.35	52.79	37.27	44.31
23 – 27	47 (13.5 percent)	50.53	47.87	52.77	37.23	47.10
28 – 32	18 (5.2 percent)	49.31	44.44	50.00	43.06	46.70
33 – 37	22 (6.3 percent)	50.57	50.57	60.91	36.36	49.60
>37	42 (12.1 percent)	48.81	50.89	50.92	31.25	45.48
F-statistics		1.592	2.75**	0.93	1.76	1.12

C.	**Marital status**						
	Single	267 (77.6 percent)	45.79	43.35	52.51	37.17	44.71
	Married	81 (23.3 percent)	49.54	49.38	54.32	35.49	47.19
	t-statistics		-1.62	-2.47**	-0.66	0.77	-1.45
D.	**Education level**						
	Undergraduate	228 (65.5 percent)	45.12	42.49	52.89	37.50	44.50
	Graduate	120 (35.5 percent)	49.58	49.06	53.00	35.42	46.77
	t-statistics		-2.18**	-3.05***	-0.04	1.08	-1.50
E.	**Academic discipline**						
	Business major	158 (45.4 percent)	54.75	55.38	57.72	44.54	53.10
	Non-Business major	190 (54.6 percent)	39.93	35.92	48.95	30.33	38.79
	t-statistics		8.22***	10.77***	3.85***	8.43***	11.59***
F.	**Income**						
	< IDR 1 million	130 (37.4 percent)	42.60	39.52	50.15	34.90	41.80
	IDR 1 million – 2 million	119 (34.2 percent)	47.48	45.27	54.62	39.29	46.67
	IDR 2 million – 3 million	22 (6.3 percent)	50.00	52.27	50.91	38.63	47.96
	IDR 3 million – 5 million	58 (16.7 percent)	49.14	47.85	56.21	34.70	46.97
	> IDR 5 million	19 (15.5 percent)	57.89	59.21	53.68	38.16	52.24
	F-statistics		4.05***	6.65***	1.11	1.34	4.34***
G.	**Years of working experience**						
	None	119 (34.2 percent)	42.02	39.29	49.08	34.45	41.21
	< 2	119 (34.2 percent)	48.95	46.22	55.80	39.50	47.62
	2 – 4	24 (6.9 percent)	49.48	44.27	45.00	38.02	44.20
	4 – 6	17 (16.7 percent)	47.06	46.32	58.82	38.24	47.61
	> 6	69 (19.8 percent)	49.64	51.45	55.94	35.33	48.10
	F-statistics		3.01**	4.84***	3.01**	1.48	4.70***

*** Statistically significant at 0.01 level (2-tailed).
** Statistically significant at 0.05 level (2-tailed).

The findings also suggest that the overall mean percentage of correct scores is 45.39 percent with the median percentage being 46.25 percent. Compared to the results found in previous empirical studies, our results show a lower percentage of correct responses, Chen and Volpe (1998) in the US generated an average score of 52.87 percent, and a median of 55.56 percent, or the findings of Beal and Delpachitra (2003) in Australia, who found an average score of 53 percent. The result indicates that, for the case of Indonesia, on average the participants answered less than half of the survey questions correctly, which also suggests a lower financial literacy compared to that found in developed countries.

The possible reason for the low level of knowledge is the systematic lack of a sound personal finance education in the university curricula of Indonesia. Most of the finance education available has a greater emphasis on corporate finance and the capital markets, rather than on the personal finance aspects. The results confirm the findings Danes and Hira (1987) and Bialaszewski et al. (1993) who suggested that most of the higher-education institutions pay little attention to the importance of personal finance in their curricula.

Based on the results reported in Table 1, the mean score of correct answers by male respondents is significantly higher than the average score of the female participants. The result also indicates that students taking business majors have a significantly better average score of correct answers compared to those by the non-business major students. It is also found that respondents with higher incomes and more work experience have a better score.

The results of the probit regression test can be found in Table 2. The findings indicate that academic disciplines, education levels, and income are positively associated with the probability of having a higher score for financial literacy. The results support the findings of previous empirical studies such as Chen and Volpe (1998) in the US who found that business majors have a better score compared to non-business majors. This finding is not surprising because the curriculum content of business majors gives the students more opportunities to strengthen their knowledge in financial and other related courses.

Table 3 demonstrates the results of the tobit regression modeling the association between the financial literacy rate and some demographic factors. Consistent with the findings using the probit regression model, the results also suggest that a higher financial literacy is positively associated with business academic disciplines. It is also found that gender is positively related with the financial literacy rate. The result confirms the findings in Table 1, where male respondents had a better financial literacy than the female respondents.

CONCLUSION

In this study, we investigated the financial literacy level of university students in Indonesia, and their associations with some demographic factors such as their: gender; age; marital status; education level; study discipline; income; work experience. The research findings indicate that the financial literacy level in Indonesia tends to be lower compared to that found in previous empirical studies, such as for the case of the US and Australia.

Using a t-test and ANOVA test, the results suggest that a higher mean score of the correct answers is attributed to the male respondents, business majors, those with a higher income, and longer work experience. The results of the probit and tobit regression tests indicate that the education level and academic disciplines were positively associated with the financial literacy rate.

The findings of this study could be carefully considered by policy makers, universities and other interest groups in Indonesia. The relatively lower financial literacy rate among university students in Indonesia, compared with those found in other countries, suggests a need for more effort in developing university curricula to improve the knowledge and skills of the university students, especially in the personal finance topic, which can be useful not only for the students (i.e. finding jobs or managing their personal finances), but also generally for Indonesian people to help them to make more reasonable financial decisions.

Table 2. Probit regression results

This table shows the result of probit regression test modelling the association between Dummy Financial Literacy (Dummy_ FI) as the dependent variable (where we assigned 1 for a high literacy, and 0 otherwise) and seven independent variables (gender; age; marital status; education level; academic disciplines; income; and working experience). The model of the probit test is as follows:

$$Fin\_Lit = \beta_0+\beta_1 Gender + \beta_2 Age + \beta_3 Marital + \beta_4 Study\_Level + \beta_5 Study\_Interest + \beta_6 Income + \beta_7 Working\_Exp + \varepsilon$$

Dependent variable (Dummy_FI)	Expected sign	Coefficient	t-statistic
Gender	+	0.14	0.94
Age	+	0.03	0.2
Marital Status	+	-0.48	-1.23
Education Level	+	0.57	1.95*
Academic Disciplines	+	0.94	5.41***
Income	+	0.24	1.86*
Working experience	+	0.11	1.37
Number of observations	348		
LR Chi square	41.77*		
Pseudo-R^2	0.09		

*** Statistically significant at 0.01 level (2-tailed).
* Statistically significant at 0.1 level (2-tailed).

Table 3. Tobit regression results

This table demonstrates the result of tobit regression test on the relationship between the Average Score of Financial Literacy (Av_Score_ FI) as dependent variable and seven independent variables (gender; age; marital status; education level; academic disciplines; income; and working experience). The model of the tobit test is as follows:

$$Av\_Score\_FI = \beta_0 + \beta_1 Gender + \beta_2 Age + \beta_3 Marital + \beta_4 Study\_Level + \beta_5 Study\_Interest + \beta_6 Income + \beta_7 Working\_Exp + \varepsilon$$

Dependent variable (Av_Score_FI)	Expected sign	Coefficient	t-statistic
Gender	+	2.23	1.80*
Age	+	-0.36	-0.31
Marital Status	+	0.17	0.05
Education Level	+	1.54	0.63
Academic Disciplines	+	12.87	8.93***
Income	+	-0.98	-0.88
Working experience	+	0.07	0.09
Number of observations	348		
LR Chi square	123.77*		
Pseudo-R^2	0.04		

*** Statistically significant at 0.01 level (2-tailed).
* Statistically significant at 0.1 level (2-tailed).

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